Farming for the Future
Progress Report
1982

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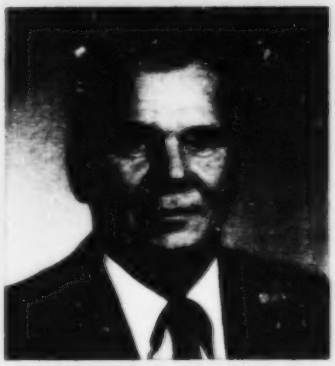
Chairman's Report



It is my privilege to present to Albertans the third annual Progress Report of the Farming for the Future agricultural research program. This report covers the program's third operational year which ended March 31, 1982.

Farming for the Future was first announced in October 1977 as a program to be supported by the Alberta Heritage Savings Trust Fund. Since that time it has been actively involved in supporting research designed to improve the net income of Alberta farmers and in enhancing the long-term viability of the province's agricultural industry.

In agriculture, research might be described as part investment and part lifeline. As an investment, research is an activity we eventually expect to lead to higher production and increased productivity. As a lifeline, research has the job of ensuring that agriculture remains viable as an industry which supports hundreds of thousands of Albertans.

To help realize these goals, Farming for the Future was created. It came at a time when a significant portion of Alberta's research resources were being underutilized. While the program allowed us to remove the obstacle of limited operating funds, it also permitted us to pursue our own research objectives using the talent and facilities already available in the province.

After three years of operation, the program has clearly shown it has answered a need. By the end of 1981 more than 850 project proposals had been directed to Farming for the Future. As of March 31, 1982, the Agricultural Research Council of Alberta, which administers the program, had approved 158 proposals, an acceptance ratio of just over 18 percent. Of the approved projects, 150 have been funded or will receive funding. The remaining proposals have been withdrawn or have received funding from other sources.

Overall, 1981-82 will, I expect, prove to be an important year for this program. First, the Agricultural Research Council approved funding for its second highest slate of new projects this past February. The first-year cost for these 41 projects will be almost $1.6 million.

The program's initial year, 1979-80, still remains the year with the highest number of new awards, with 54 funded at a first-year cost of $2.13 million. Since then, 31 projects were initiated in 1980-81 and a further 25 in 1981-82. During its first three years, Farming for the Future has offered support totalling more than $9.3 million for projects which cover almost every aspect of agriculture important to the future of this province. This level of support will continue in 1982-83 with more than $5.7 million being spent on 141 projects in progress.

Second, 1981-82 will prove important for new directions being taken by Farming for the Future. At a policy meeting held in January, the Agricultural Research Council approved two new sub-programs — the On-Farm Demonstration Program and the Graduate Student Research Support Program.

With the introduction of the On-Farm Demonstration Program, the Council hopes to increase the rate at which new agricultural technology is transferred into everyday use by the farm industry. Specifically, the program assists producers and producer organizations together with scientists and staff of Alberta Agriculture in testing and demonstrating new technology.

If the On-Farm Program looks after the 'demand' side of research, the Graduate Student Research Support Program is aimed at the long-term 'supply' side. In part, it is a practical answer to growing concerns about a potential reduction in scientific talent for agricultural research. While the program's immediate aim is to support research undertaken by post-graduate students in Alberta universities and at the Western College of Veterinary Medicine, the long-term goal is to provide students with the motivation necessary to keep them involved in agricultural science.

Third, 1981-82 will be important because of a major review and evaluation of Farming for the Future undertaken by the Agricultural Research Council in January. In short, the Council has decided to seek renewal of Farming for the Future's mandate which expires in 1984.

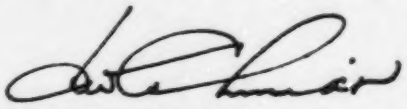
I believe Farming for the Future should be renewed. The new technology it has already generated has more than repaid its first allocation of $10 million from the Heritage Fund. A second allocation of $15 million from the Heritage Fund will be put to use starting in 1982-83. I expect we will see similar value-for-money from the research it will support.

What I find especially promising is the potential a program like Farming for the Future holds for farmers. The results we have seen merely hint at what lies ahead. You could say agricultural research is a type of long-term public investment: like the research it supports, that investment needs time to pay off.

Successful agricultural research most often offers us advances in 'bits and pieces' which the industry gradually learns to implement. It is this long, ongoing process which is at the heart of agricultural research and its relationship with the agricultural industry.

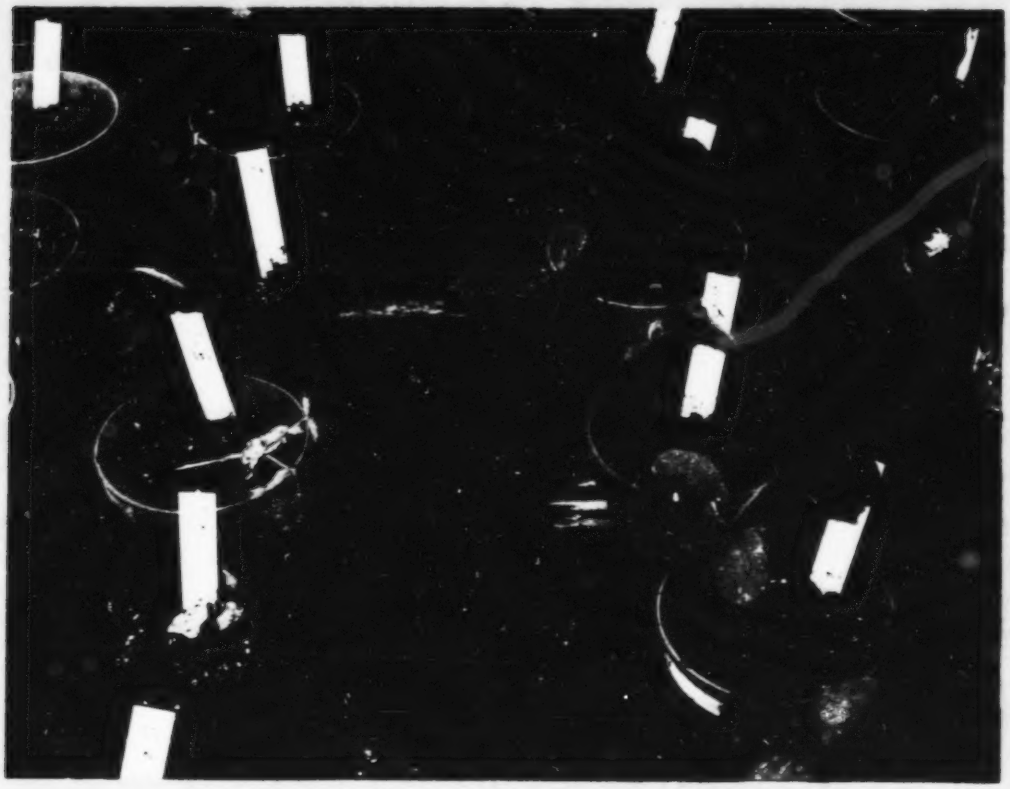
I believe it is worth noting that agricultural research is neither an especially easy nor clean job. The work can be long and painstaking. In some crop projects hundreds of thousands of samples may be handled in any one year. In animal research, the work can vary from the very fine analysis of feed nutrients to the very mundane task of cleaning out animal stalls. It is very labour intensive. On average, researchers budget more than 71 percent of Farming for the Future grants for hiring support manpower. That figure excludes salaries for most project managers. The scientists employed by public institutions such as provincial and federal departments of agriculture and universities are ineligible for personal reimbursement from Farming for the Future awards.

Agricultural research is a key and, overall, very cost-effective method of ensuring the future of agriculture. Our supporting research activities through programs such as Farming for the Future is an important and necessary form of public investment. We all have a great deal at stake in our agricultural industry — both as an economic and social cornerstone for tomorrow's Alberta. I believe it is a resource we must not only protect but also promote if we are to obtain the many benefits and opportunities it can yield.



Dallas W. Schmidt
Minister of Agriculture
Chairman, Agricultural Research Council of Alberta
August 1982

Before they embark on field trials, researchers often infect individual potted plants to study why a disease begins, how it spreads and if it will respond to various chemicals or alternate management techniques. Findings are then checked on small plots before finally being tested in field-scale trials.



1981-82 PROGRESS REPORT

When the history of Alberta's agricultural sector is told, it often highlights the struggles of early pioneers and the achievements of individuals who made a profound mark on the industry. Less emphasized but equally crucial to Alberta's agricultural progress has been producer development and use of new technology.

From innovations in crop production and livestock rearing, to the reduction of back-breaking labour through the use and refinement of farm machinery, to devising new methods for eliminating weeds, insects and disease, the introduction of advanced technology has helped ease the struggles of Alberta farmers and has permitted the growth of new, more productive ways of farming.

These advances have often been the product of agricultural research, a process that has taken place in Alberta since organized farming first occurred. Research stations have existed in Alberta since the early years of this century. Strains of wheat from the northern part of the Peace River Region were winning world championships in the early 1900s.

The efforts to keep agriculture up-to-date continued through succeeding decades. The resulting technology — sometimes generated by farmers, sometimes by private industry, most often by Agriculture Canada research stations, the University of Alberta and the Western College of Veterinary Medicine — has given Alberta farmers the tools to make Alberta into one of the most agriculturally productive provinces in Canada.

One of Farming for the Future's primary goals is to help maintain the quality of life in rural Alberta through research which will improve net farm income and enhance the viability of the agricultural industry.

A CHANGING INDUSTRY

With the growth in Alberta's agricultural productivity have come new styles of farming and an even greater need for research. The ability to be competitive, especially in a global market, has become very important. It is a requirement best met by research efforts specifically aimed at improving production efficiency, and thus, net farm income and the viability of the family farm, the backbone of Alberta's agricultural industry.

In the 1970s, a lessening of funding for agricultural research from traditional sources plus increasing awareness of its long-term value led to a renewed emphasis on agricultural research in Alberta. Farming for the Future was one result of this interest.

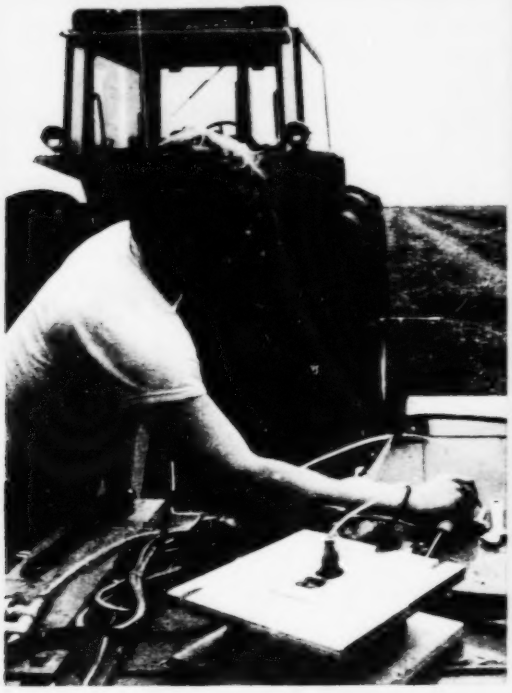
CHALLENGES AHEAD

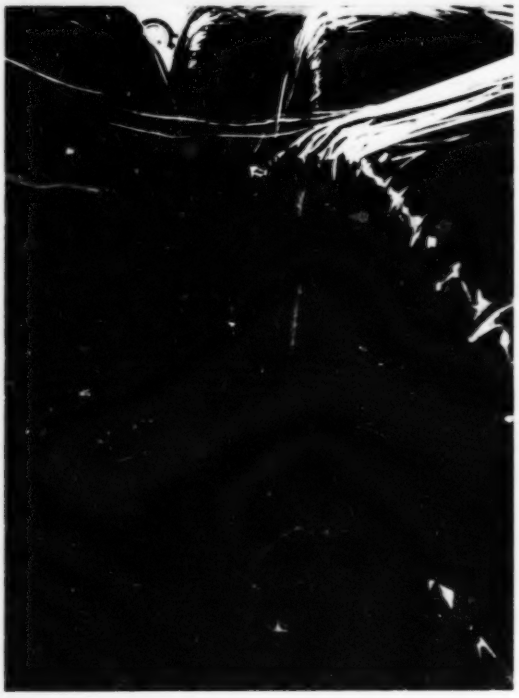
While the future of Alberta's agricultural industry remains essentially secure, it faces a number of potentially damaging problems.

In the short term, economic problems are evident. Low commodity prices, difficulties in Canada's marketing and transportation sector, poor global demand for some major Canadian products, quickly rising input costs, high interest rates, low grain quotas and reduced quotas for a number of other products such as eggs and fluid milk will limit farm growth. While livestock prices have risen markedly in 1982, expectations of lower demand will continue to hinder the cattle and hog sectors.

Over the long term, more basic problems are appearing. Soil degradation is one. Salinity build up, nutrient loss, erosion, particularly water erosion, and changes in soil structure such as compaction from heavy farm machinery need to be investigated if the quality of one of Alberta's major resources is to be maintained.

A number of Farming for the Future projects are investigating nutrient retention by forages and hay after harvest. Initial measurements have found applying sulphur dioxide (SO_2) to forages after cutting may increase their nutrient value. Further work is underway to design efficient, cost-effective application equipment and to discover the practical limitations of using SO_2.





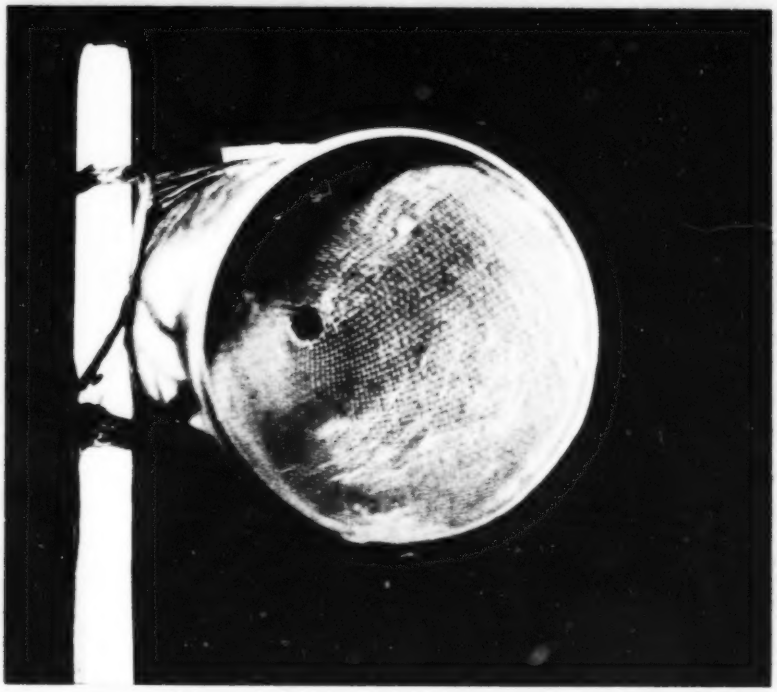
Climatic changes are another concern. Predicted global warming trends may augur reduced rainfall or prolonged heatwaves which would require new, more drought- and heat-resistant crop varieties. Acid rain, other types of pollution, more stringent standards for chemical use and non-agricultural use of farmland are other concerns that will require research to provide new answers or alternatives.

While any one problem may never actually appear, enough will eventually surface to affect producer net income and the viability of the agricultural industry. In turn, this will have a negative effect on consumers. In every instance, agricultural research is expected to provide alternatives by introducing technology that will answer the immediate and future needs of agriculture.

Meeting its productive potential is undoubtedly the greatest challenge facing Alberta's agricultural industry in the 1980s. Future progress will undoubtedly reflect how successfully the industry expands and diversifies, yet it must also answer the immediate needs of increasing producer margins or net income. Reducing costs and increasing productivity are the only reliable methods of defence. New systems and procedures will be needed to help reach these goals. In fact, the future of most Albertans involved in the agricultural sector depends on the ability of research to correct current problems and to develop technology that will fuel needed progress.

The situation presents Alberta's Farming for the Future program with a very considerable challenge.

Moths and cutworms are among many pests that pose a continuing threat to Alberta's farm production. As part of a broad effort by Agriculture Canada to design controls for these insects, Farming for the Future has funded a project that is attempting to relate the number of insects trapped in an area to the local strength of an infestation.



THE PROGRAM

As the major agricultural research support program of the Alberta Government, Farming for the Future is designed to fund those projects which hold benefits for Alberta producers but that are unlikely to receive support from conventional sources.

Since 1979 the program has achieved consistent growth, making great headway in funding new research projects, rekindling interest in undermanned and underfunded research areas, employing underused scientific manpower and providing opportunities to employ and train new scientific talent.

Contracting out research projects is the program's most important function. All projects are selected from proposals generated by agencies outside the program. In turn, these projects are expected to help Farming for the Future meet its two major objectives: to improve net farm income in Alberta and to enhance the long-term viability of Alberta's agricultural industry. Where applicable, research into northern agriculture is also emphasized.

Farming for the Future's administrator, the Agricultural Research Council of Alberta, has defined the role of the program as one of augmenting and complementing existing research efforts. By supporting research rather than conducting it, the Council believes it has answered one of the most important problems facing Alberta's agricultural research scientists — a shortage of operating funds.

By utilizing the facilities and expertise that already exist in established institutions, the Council has been able to increase the amount of agricultural research conducted in Alberta without resorting to large capital expenditures. In turn, this has set a course for Farming for the Future to achieve results long in advance of what many anticipated.

In support of Alberta's poultry sector, Farming for the Future is funding a study into the cause and prevention of rickets in turkeys, a crippling disease which imposes high costs on Alberta turkey producers.

THE ADMINISTRATION

Farming for the Future was first announced in the Alberta Legislature on October 24, 1977. At that time the program was given a five-year operational mandate and access to a $10 million allocation from the Alberta Heritage Savings Trust Fund. Active preparation began in 1978 and formal funding of projects started on April 1, 1979.

The Agricultural Research Council was created in April 1978. Its membership reflects the broad interests of Alberta's agricultural industry. In addition to eight producers, senior representatives from Alberta Agriculture, Agriculture Canada, the University of Alberta, the Alberta Research Council and the Legislative Assembly of Alberta sit on the fifteen-member Council. The Minister of Agriculture serves as the Council's chairman.

Farming for the Future's operation generally reflects a commodity approach, and nine program areas have been established that highlight the major components of Alberta's agricultural sector.

Sheep have an important role in cattle research. With digestive systems similar to cattle, sheep are less costly to use than cattle in ruminant trials which require large control groups. Once researchers have identified a technique or finding, they switch to cattle to validate their findings and conduct final experiments.

These areas are:

- apiculture/entomology
- cereals and oilseeds
- forages
- irrigation
- land resources and engineering
- non-ruminants
- processing, transportation, marketing and socio-economics
- ruminants
- special crops

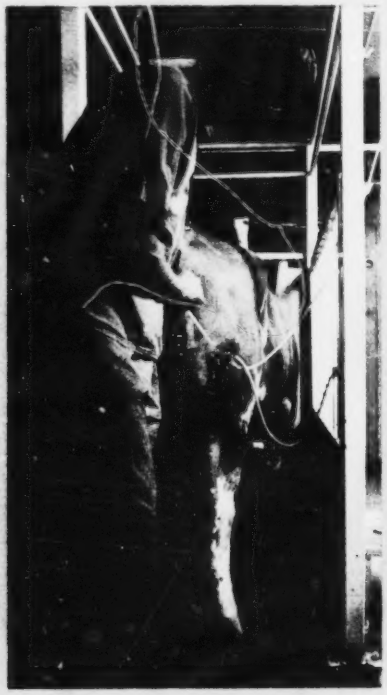
The commodity structure has proven to be very flexible. Because project proposals tend to concentrate on a particular commodity or problem area, the approach has simplified handling the several hundred submissions received each year. Should a project pertain to more than one category, it is examined according to the guidelines of each applicable program area. Occasionally, a submission cannot be categorized. In that instance it is reviewed under all program areas.

Project proposals are usually requested each fall. This allows time for a structured review that lasts just over two months. To evaluate proposals, a committee of producers and scientists, headed by a member of the Council, is assigned to each program area. After appraising submissions, the committees forward their recommendations to Council members for another review. Final funding decisions are made when the full Council meets in late January or early February. All approved projects are then awarded funding on a fiscal year basis which begins each April 1st.

THE OPERATION

During 1981-82 a number of developments occurred which will prove important to the continuing effectiveness of Farming for the Future. In January 1982 the Agricultural Research Council held a special policy meeting to examine and evaluate the progress of Farming for the Future and to recommend any changes in the future direction of the program.

Among the 'frontier' research supported by Farming for the Future in 1981-82 was an attempt to perfect the freezing and transplantation of cattle embryos. The aim of the researchers was to overcome problems with crystalline development in embryos which are frozen prior to transport or reimplantation in a host cow. While use of this new technology is costly, it does allow producers to make more efficient use of their best breeding stock.



The Factors

Many questions were considered. Because of the limited time it has been in operation, Farming for the Future remains difficult to rate in terms of project success or failure. As of March 1982, five of Farming for the Future's 110 projects had been discontinued. Usable results are expected from four of the five projects. With this very low termination rate, the Council believes the selection process it is using has proven effective.

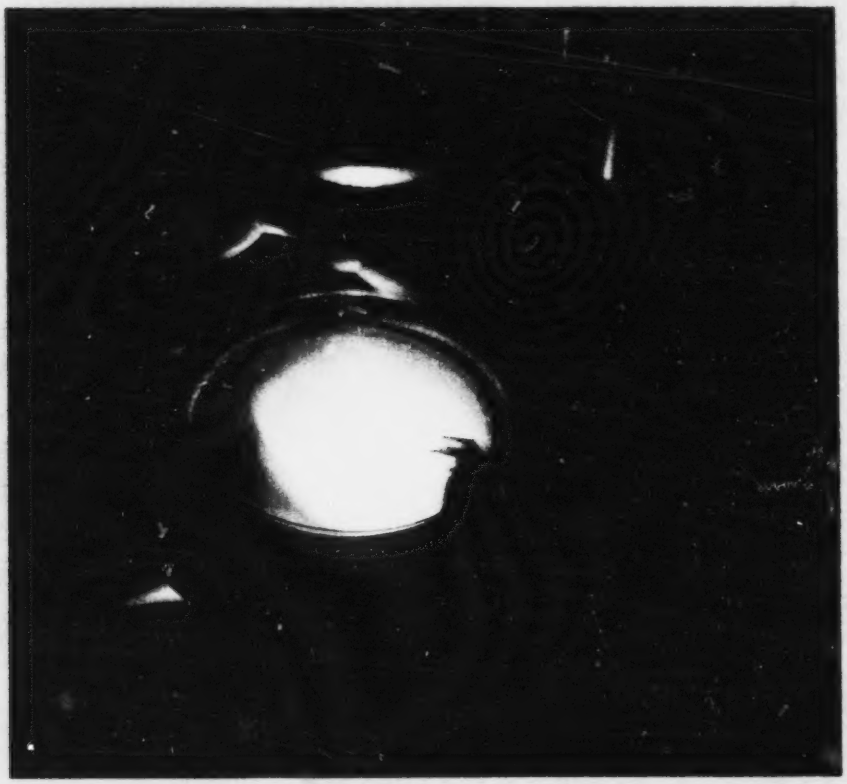
Another question centred on the program's administrative structure. Farming for the Future now exists as a program supported by the Heritage Trust Fund and receives administrative support from Alberta Agriculture. The low cost of operation directly borne by the program would rapidly increase if Farming for the Future were to become a separate organization having no direct association with Alberta Agriculture.

Also considered were the original reasons that led to creation of Farming for the Future in 1977. When it was first developed, Farming for the Future was designed to utilize some of the unused research capability then present in Alberta. That excess capacity no longer exists in terms of facilities, and to a lesser degree, in terms of manpower.

During its existence Farming for the Future has also become known within the research community as a supplemental funding source that augments and complements the research efforts being undertaken by existing research institutions. If Farming for the Future were to become a separate organization, then that relationship would be lost to the province.

A significant factor in the examination was the structure of Alberta's agricultural industry. Being very technology dependent, the industry requires new crops and livestock breeds and new management techniques to progress. Old problems must be solved, and developing problems must be handled as quickly and efficiently as possible. Farming for the Future has begun to offer the needed technology and promises to become a still greater source in the near future.

From the labour needed to plant, weed and reap to the finesse needed to manipulate tiny slivers of living material with delicate instruments, agricultural researchers require a considerable variety of skills and talents.



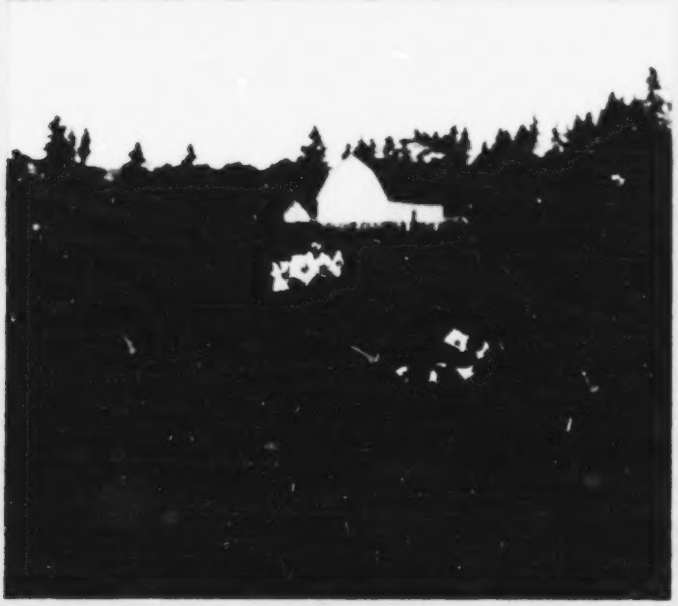
The Recommendations

At present Farming for the Future is operating on a second allocation from the Alberta Heritage Savings Trust Fund. The total $25 million allocated to Farming for the Future since 1977 should be exhausted by the end of the program's operational mandate in 1984.

After lengthy deliberation the Council recommended the program expand its areas of operation, such as with two sub-programs which were later created, but it should not do so at the expense of other research institutions. The Council also decided the program must place much greater emphasis on disseminating the details of new technology, regardless of its source, to Alberta producers.

Finally, the Agricultural Research Council recommended that Farming for the Future be continued after its current mandate expires using the present method of administration. In its deliberation the Council felt Alberta's agricultural research sector was just beginning to show some of the initiative required for this sector to be successful. With many proposals and government studies also recommending some very large and intensive research efforts in a number of areas, the Council believes that current activities should at least be maintained to give the sector the support that is necessary for the immediate future.

Special crops production is attracting increasing interest within Alberta's agricultural industry. Work being supported by Farming for the Future may lead to new potato varieties which would store longer and supply Albertans with domestic potatoes year-round.



On-Farm Demonstrations

After reviewing the progress of Farming for the Future, the Council quickly acted on its aim of increasing producer exposure to new technology. A new sub-program called the On-Farm Demonstration Program was created and $300,000 was allocated to it for 1982-83.

The new program is expected to increase the involvement of producers and producer organizations, in cooperation with scientists and Alberta Agriculture staff, in regionally-applicable research as well as on-farm testing and demonstration projects that display the use of new technology.

The great number of Alberta producers interested in developing and adopting new technology has essentially been a major untapped resource in the process of agricultural technology development and transfer. Farming for the Future's research awards, for instance, were initially intended to support formal research. This usually eliminated less formal producer projects which often concerned local testing of new agricultural technology. The On-Farm Demonstration Program will help overcome this problem and offers the potential for new technology gains as well as faster utilization of new technology.

The program permits great scope in project proposals: in addition to traditional subjects such as crops, livestock, weeds and fertilizer, producers are encouraged to test and demonstrate new technology on tillage, soil and water conservation, farm management and decision making, grain drying and storage, energy conservation, waste management and recovery, livestock housing and new or novel approaches for marketing local commodities.

Though a key component of many Farming for the Future projects, field work can be long, hard and sometimes quite uncomfortable. (One person below found wearing a face mask a hot but effective deterrent to pesky mosquitoes during a mid-summer day.) For many students summer work on a project will help pay for a year at university. Some will also obtain support from Farming for the Future's new Graduate Student Research Support Program which is designed to fund research undertaken by those seeking graduate degrees in agricultural sciences.

Student Research

A second major sub-program approved in January was the Graduate Student Research Support Program.

Among the considerations leading to this program was the building concern about a continuing supply of qualified manpower for agricultural research. Good beginning salaries offered by private industry were reducing the number of graduate students continuing their education in the agricultural sciences.

Formal Farming for the Future awards somewhat alleviated this drain. Its research grants have allowed scientists and professors at various institutions to undertake more extensive research efforts. In turn, these projects have opened up job opportunities for agricultural students to gain practical experience in agricultural research as well as to earn personal income.

However, graduate students must conduct their own research projects to gain a graduate degree. Funding for these projects is often difficult or even impossible to obtain. The Graduate Student Research Support Program will permit promising students to conduct their research projects without having to overcome the hurdle of finding sufficient operating funds or even providing their own research funding. The awards are available to a maximum of $10,000 per year. The awards are not intended as bursaries or stipends to graduate students. Their sole purpose is to cover the actual costs of conducting a graduate student's research project.

The allocation for this program for 1982-83 is $200,000.

The use of 'fistulated' cows enables researchers to obtain crucial information on cattle digestion and nutrition. Fistulas (or taps) may be placed in a number of areas, most often the neck and in or between one or more of a cow's four stomachs.

Other Developments

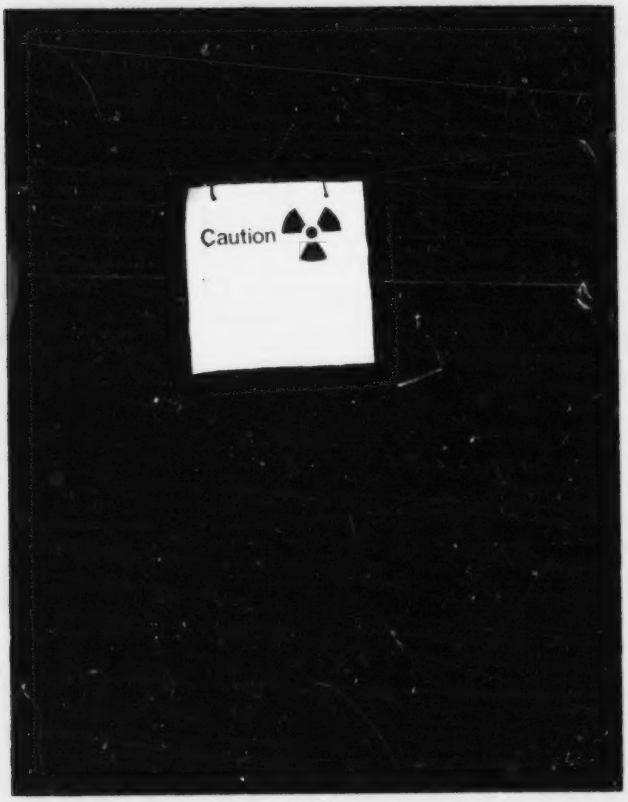
A number of operating changes were made in the Farming for the Future program during 1981-82.

Project proposals are usually submitted each fall and have generally been reviewed at an annual approval session in February. The review and selection process has been the same whether the proposals were requesting new or renewal funding. Beginning in February 1982 that guideline was lifted for selected renewal projects. Several projects were approved for two-year terms, assuring research managers they would receive funding in 1983-84 upon submission of satisfactory progress reports.

A second policy change was a decision to allow the Council's executive committee to approve and fund new projects involving immediately needed research without having to await full Council approval in February 1983. This change will also permit the executive to approve minor changes in funding and project objectives for previously approved projects.

During the year, the Agricultural Research Council toured research facilities and reviewed Farming for the Future projects at Agriculture Canada's Lethbridge Research Station and on the University of

By adding weak radioactive particles to fertilizer, scientists can measure the usable nutrients that remain in the soil the year after fertilizer is applied to a field.



Saskatchewan campus in Saskatoon. During the two-day November tour in Saskatoon, the Council visited the Western College of Veterinary Medicine, the Veterinary Infectious Disease Organization, Agriculture Canada's Animal Physiology Laboratory, the Western Division Headquarters of Agriculture Canada's Research Branch, the POS Pilot Plant Corporation and the Western Regional Laboratory of the National Research Council.

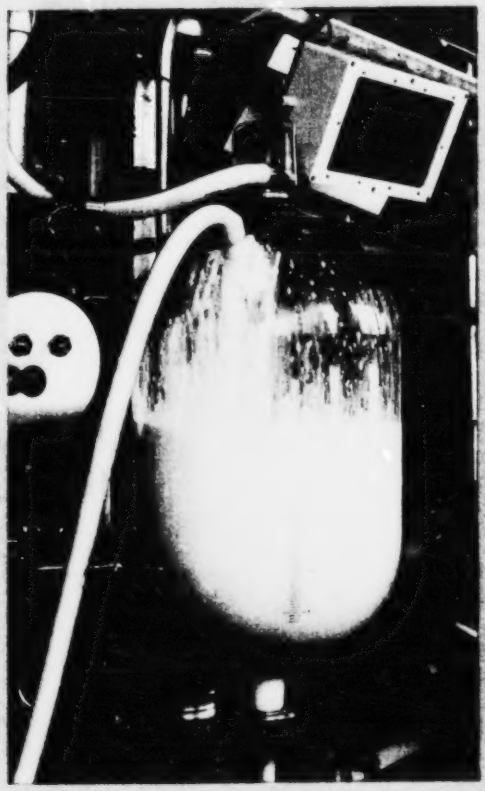
In January, Mr. H.B. McEwen, Deputy Minister of Alberta Agriculture, joined the Agricultural Research Council as Vice-Chairman. Mr. McEwen succeeds the late Dr. J.G. O'Donoghue who had been Vice-Chairman since Farming for the Future was initiated.

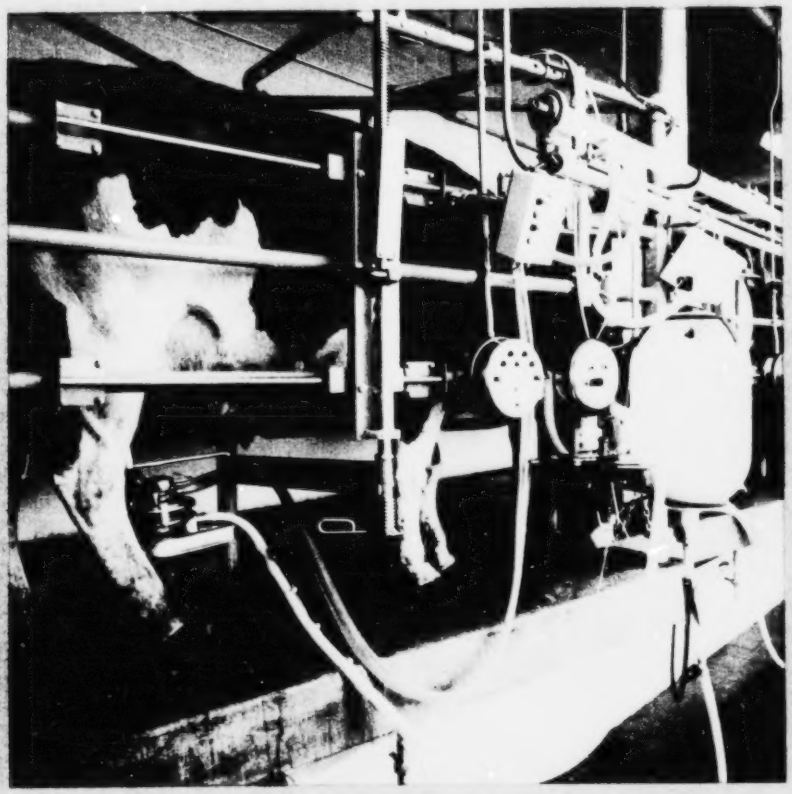
PROJECT AWARDS

Since the start of Farming for the Future, the Agricultural Research Council has received almost 850 requests for new agricultural research grants. By the end of February 1982 it had approved 158; however, due to withdrawals and other factors, funding will have been offered to only 150 projects through 1982-83.

In its third operating year, 1981-82, Farming for the Future supported 105 projects. Twenty-five were new and required $761,915 in first-year funding. Of the 80 projects in operation at the end of 1980-81, 75 received renewed funding while the remainder used funds carried over from the previous year. Total research support during 1981-82 exceeded $4.0 million.

Improved productivity has allowed Alberta's dairy sector to meet increasing demand while reducing the province's total dairy cow population. Continuing research will further enhance productivity by refining the nutrient needs of dairy animals and through better breeding and more intensive maintenance of herd health.

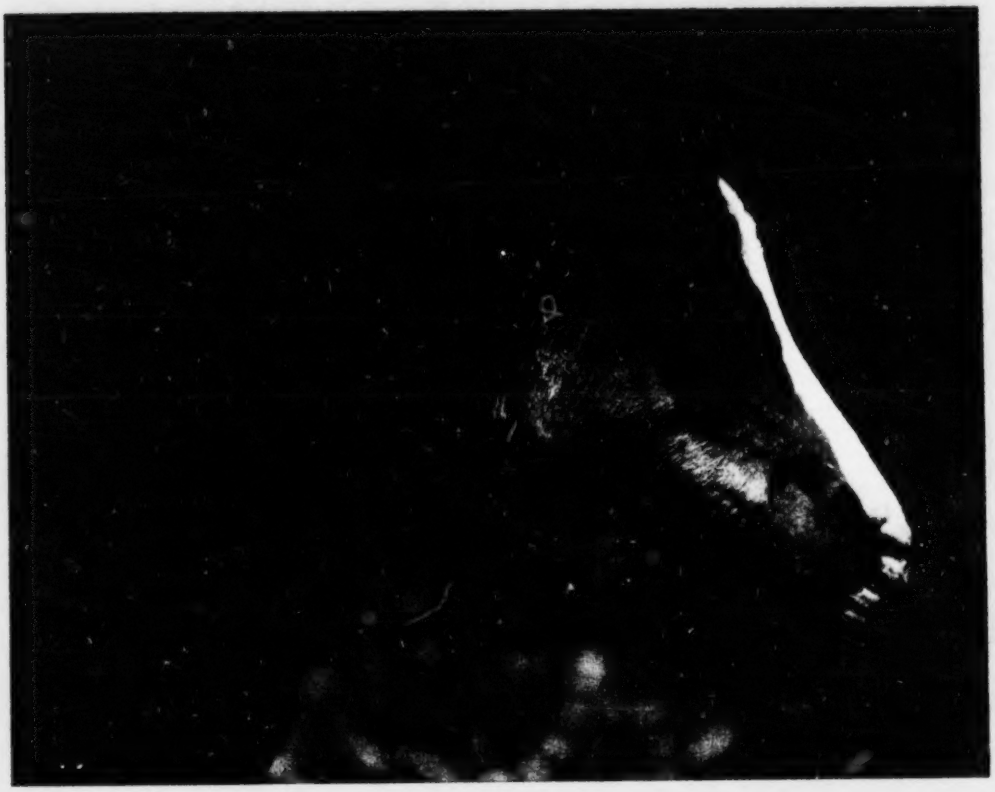




Distribution of Projects and Estimated Funding, by Program Area, 1981-82

	Projects		Funding	
Program Area	Assigned	% of Total Assigned	Assigned	% of Total Assigned
Apiculture/Entomology	8	8	$ 343,060	8.5
Cereals and Oilseeds	20	19	894,880	22.1
Forages	18	17	703,300	17.4
Land Resources and Engineering	9	9	563,465	13.9
Non-Ruminants	7	7	192,000	4.7
Processing, Transportation, Marketing and Socio-Economics	6	6	101,250	2.5
Ruminants	28	27	985,718	24.4
Special Crops	9	9	259,644	6.4
TOTALS	105		$4,043,317	

To aid Alberta's horse production, Farming for the Future is supporting a number of feeding trials intended to improve management of horses under feedlot conditions.



Through December 1981 Farming for the Future received more than 250 applications for 1982 funding, including 149 new research proposals. The average request for an ongoing project was $47,342 while the average support requested for a new proposal was $65,176. Funding requests totalled about $14.5 million.

In February 1982, the Council approved 41 new projects (one proposal was later withdrawn) that were to start April 1, 1982. Their expected first-year cost is almost $1.6 million.

Another 101 projects were renewed. The cost for the 141 projects underway in 1982-83 should total about $5.71 million. The average award for all projects underway in 1982-83 is $40,506 compared to the 1981-82 award average of $36,758.

With the $500,000 allocated to two new Farming for the Future sub-programs, total outlays in 1982-83 could exceed $6.2 million. An additional amount has been budgeted for various administrative charges and banking services. Total expenditures allocated to research since the start of the program through 1982-83 are now estimated at approximately $15.5 million.

Project Status

Regardless of the year in which they started, all Farming for the Future projects are required to be completed and to have submitted a final report by March 31, 1984 when the program's current mandate ends.

The majority of projects are expected to be in progress until that time. However, a number will be completed before then.

By March 31, 1982, work on nine projects had ceased. Four were completed on schedule and five were discontinued. Final reports have been received from most projects. An additional 15 projects are expected to submit their final reports in 1982-83. For 17 projects 1982-83 is scheduled to be the final year of funding. In all, 43 projects are expected to reach successful completion by the spring of 1983.

Beef production is a key component of Alberta's agricultural industry. Scientific crossbreeding at the University of Alberta has produced so-called Synthetic Cattle which yield up to 30 percent more meat than normal purebred cattle.

Project and Funding Awards by Year

	New		Ongoing		Total	
	Projects	Funding	Projects	Funding	Projects	Funding
1979-80	54	$2,133,680	—	$ —	54	$ 2,133,680
1980-81	31	980,465	51	2,210,642	82	3,191,107
1981-82	25	761,915	80	3,281,402	105	4,043,317
1982-83	40	1,594,500	101	4,116,911	141	5,711,411
TOTALS	150					$15,079,515

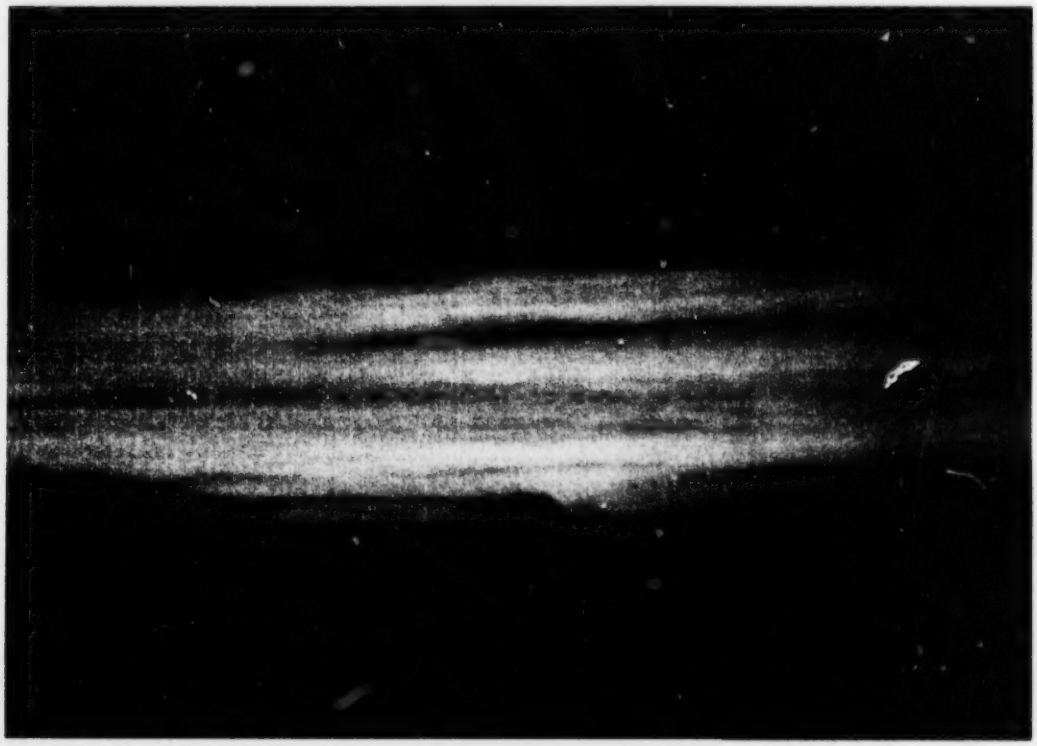
Hog production has become a specialized enterprise for many Alberta producers. Among their continuing research concerns are swine nutrient requirements, disease incidence and new marketing strategies.

SOME CONCERNS

A number of trends are of increasing concern to the Council. The declining number of applications received in 1979 and 1980 reversed in 1981 when approximately 50 percent more applications were received than the previous year. However, the quality of much of the research being proposed remains low while the average monetary award being requested is increasing quite rapidly, well over 20 percent per year.

The Council believes these trends indicate Alberta's agricultural research capability is almost saturated both in terms of research manpower and facilities. As it has indicated in the past, the Council will continue to look for further research resources outside Alberta and the Western College of Veterinary Medicine and the Veterinary Infectious Disease Organization in Saskatoon if required. The Council also hopes the increasing pressure on existing agricultural research resources will encourage the creation of more research facilities throughout Western Canada.

With the large amounts of capital required and steep operating costs irrigation farming has special research needs. For that reason irrigation became Farming for the Future's ninth program area in 1981. Five projects in the new program area were approved for 1982-83.



THE FUTURE

Having fostered many past successes in Alberta's agricultural sector, research remains a key ingredient in the province's future prosperity and is a crucial component in the health of its economy.

While producers receive more immediate returns from agricultural research, the greatest benefit goes to the consumer. Consumers especially benefit from food prices that reflect lower input costs resulting from new agricultural technology and in an improved selection of more nutritious and safer food products.

Employment is another major consideration. New industries created to utilize new farm products open up new jobs. More income, greater demand, more jobs — that is the type of cycle which produces growth in the province's economy.

Other benefits from agricultural research come from the export of agricultural products and Canadian agricultural technology. Overall, it is estimated that consumers eventually receive up to 80 percent of the total economic benefit achieved from agricultural research, which historically has repaid a minimum of 7:1 for every dollar invested.

In 1981-82 Farming for the Future projects continued to seek this type of return. During the year the program also adopted new methods for fulfilling the technology needs of the province's agricultural industry by initiating programs to attract more producers into becoming actively involved in the research process and to offer needed support to agricultural students who could become the qualified manpower needed in agricultural research.

In its own unique way, Farming for the Future is ultimately attempting to live up to the high standards set by other agricultural research programs in Canada. Like them, its goal is achievement of an efficient and effective food system that provides improved net farm income and a better quality of life. Ultimately, this system should be one that delivers food to the consumer at the lowest possible price and still allows the agricultural industry to earn the fair return or profit necessary to perpetuate itself efficiently.

Through its current efforts, Farming for the Future is helping to ensure those goals by being one of the most comprehensive agricultural research support programs in Western Canada.

Over the space of an hour another member of Alberta's poultry industry appears. Though he was naturally conceived, his development has been rigidly controlled and his progress automatically monitored. Now he is on his own. Within hours he will be shipped from an Alberta hatchery to a producer who specializes in raising broilers to market weight. With formulated feeds his growth will be swift and fairly automatic. He is a product of the unending search for new agricultural technology.

Project Summaries

Title and Objective	Research Manager	Institution	Funding 1979/82	Funding 1982/83
Apiculture/Entomology				
Alberta Bee Breeding Program – to breed for Alberta climatic conditions a bee that displays superior docility, overwintering ability, honey production and disease resistance	T.I. Szabo	Agriculture Canada — Beaverlodge, on behalf of the Alberta Beekeepers' Association	$489,000	$214,600
Insect Sex Attractant Systems to Monitor Crop Pests – to develop methods for forecasting outbreaks of the Bertha armyworm and seven cutworm species	J.R. Byers	Agriculture Canada — Lethbridge	107,960	47,000
Commercial Package Bee Production in Northern Alberta – to promote commercial production of overwintered package bees in northern Alberta	H.J. Pirker	Pirker Apiaries — Debolt	17,500	in progress
Studies Toward the Prevention of Anaphylactic Sensitization to Bee Stings – to study and identify the factors which cause some people to become hypersensitive to bee stings	M.F. David	University of Manitoba — Winnipeg, Manitoba	33,300	26,000
Protecting Cattle Against Blood-Sucking Flies – to develop for on-farm use insect repellents that protect cattle against blood-sucking flies	J.A. Shemanchuk	Agriculture Canada — Lethbridge	59,565	in progress
Development of *In vitro* Techniques for Mass Production of Infective Spores of *Nosema locustae* Canning (Microsporida) to be Used in the Management of Grasshopper Populations – to develop tissue culture methods for mass producing and procedures for long-term storage of *Nosema locustae* spores to be used in controlling grasshoppers in rangeland, cereal crops and forage seed fields	A.B. Ewen	Agriculture Canada — Saskatoon, Saskatchewan	44,100	25,300
Assessment of the Role of Plant Chemicals in Repelling and Deterring Feeding of Flea Beetles – to assess the inhibiting role played by the chemical makeup of plants such as stinkweed in deterring feeding by flea beetles	B.K. Mitchell	University of Alberta	26,500	in progress
Clinical and Immunological Assessment and Management of Risk in Honey Bee Sting Sensitivity – to uncover trends in the occurrence of and methods for preventing hypersensitivity to bee stings among people involved in the honey industry	J.H. Day	Queen's University — Kingston, Ontario	50,000	47,000
Cereals and Oilseeds				
Regional Testing of Cereal and Oilseed Varieties in Alberta – to provide performance and adaptability information on barley, wheat, oats, canola and flaxseed varieties	J.H. Helm	Alberta Agriculture — Lacombe, in cooperation with other agencies	435,000	190,000
Screening Winter Wheat for Resistance to Snow Mold Pathogens under Controlled Conditions – to develop methods for screening varieties of winter wheat that are resistant to snow mold in cool growing conditions	J.A. Traquair	Agriculture Canada — Lethbridge	68,700	3,000
Utility Wheat Varietal Development Program – to produce utility wheat varieties adapted to the climatic conditions of central and northern Alberta	K.G. Briggs	University of Alberta	224,500	102,800

Title and Objective	Research Manager	Institution	Funding 1979/82	Funding 1982/83
Field Trial Agronomic Research in Field Crop Production – to study the production and management problems of high-moisture grain under Alberta conditions	J.H. Helm	Alberta Agriculture — Lacombe	50,000	completed
Intensification of Breeding Barley Varieties for the Peace River Region – to identify high yielding, early maturing barley lines adapted to the Peace River Region	R.I. Wolfe	Agriculture Canada — Beaverlodge	109,500	48,025
Intensification of Rapeseed (Canola) Breeding in the Peace River Region – to identify early maturing Argentine and higher yielding Polish canola lines adapted to conditions in the Peace River Region	R.S. Sadasivaiah	Agriculture Canada — Beaverlodge	53,250	22,600
Disease Resistance Selection in Early Maturing Barley, Rapeseed (Canola) and Wheat – to provide disease-resistant, early maturing varieties of barley, canola and wheat adapted to northern Alberta conditions	R.I. Wolfe	Agriculture Canada — Beaverlodge	74,500	46,430
Intensification of Wheat Breeding in the Peace River Region – to breed earlier maturing utility wheats suitable for use in northern Alberta	R.I. Wolfe	Agriculture Canada — Beaverlodge	67,900	32,000
Development of Agronomic Packages for Barley, Rapeseed (Canola), Wheat and Oat Varieties in the Peace River Region – to help farmers in northern Alberta maximize returns from cereal and oilseed production and to aid the introduction of early maturing varieties to northern Alberta	R.I. Wolfe	Agriculture Canada — Beaverlodge	253,500	95,000
Disease Resistance Breeding in Rapeseed (Canola) – to develop disease resistance in canola varieties suitable for production in Alberta	Z.P. Kondra	University of Alberta	146,500	60,000
Early Maturity and Frost Tolerance of Rapeseed (Canola) – to identify canola types which mature very early in cool growing conditions and to evaluate the effect of sub-freezing temperatures on canola plant growth and seed quality	Z.P. Kondra	University of Alberta	104,500	24,000
Weed Control in Alberta Cropland – to provide better methods for controlling several of Alberta's major weeds including Canada thistle, perennial sow thistle and cleavers	W.H. Vanden Born	University of Alberta	159,370	69,271
Canada Thistle Control – to develop effective chemical and integrated cultural/chemical control measures for Canada thistle	P.A. O'Sullivan	Agriculture Canada — Lacombe	62,000	31,570
Biological Evaluation of Advanced Selections of High-Lysine Barley Produced in Alberta Agriculture's Feed Grain Breeding Program – to produce a high-lysine barley with a yield similar to varieties already grown in Alberta	R.M. Beames	University of British Columbia — Vancouver, British Columbia	37,500	in progress
Field Trial Agronomic Research in Special Crop Production for Central Alberta – to identify and adapt crop varieties with the intent of diversifying crop production in central areas of Alberta	J.H. Helm	Alberta Agriculture — Lacombe	110,000	completed
Expansion of Winter Wheat, Winter Triticale and Spring Triticale Breeding in Central Alberta – to develop winter wheat and winter and spring triticale varieties that are adapted to central Alberta	J.H. Helm	Alberta Agriculture — Lacombe	65,000	37,000

Title and Objective	Research Manager	Institution	Funding 1979/82	Funding 1982/83
Breeding Soft White Spring Wheats for Western Canada – to develop superior varieties of soft white spring wheat for the irrigated areas of Alberta and Saskatchewan	J.B. Thomas	Agriculture Canada — Lethbridge	64,540	70,900
A Study of 'Bacterial Pod Spot' and Other Diseases Caused by *Pseudomonas* sp. in *Brassica campestris* – to establish methods for controlling the bacterial disease *Pseudomonas* and related infections in Alberta canola	J.N. Campbell	University of Alberta	45,640	17,400
Application of Haploid Technique to Barley Breeding – to produce barley haploids for use in Alberta barley breeding programs	John Kuspira	University of Alberta	106,600	30,000
Development of Hybrid *Brassica campestris* Varieties for Alberta and Northern Saskatchewan – to test the feasibility and economics of producing hybrid canola varieties	R.K. Downey	Agriculture Canada — Saskatoon, Saskatchewan	79,300	49,685
Whole Plant Utilization of *Brassicas* – to study the use of canola as a livestock greenfeed and its feed value when affected by frost	J.R. Ingalls	University of Manitoba — Winnipeg, Manitoba	24,000	27,300
Weed Competition with Cereal and Oilseed Crops – to develop mathematical models for predicting producer losses resulting from competition of various weed species with barley, canola, oats and wheat	P.A. O'Sullivan	Agriculture Canada — Lacombe		52,300
Minimizing Herbicide Application Rates by Adding Adjuvants for Weed Control in Annual Crops – to assess the use of surfactants and inorganic additives in reducing herbicide application rates and costs	P.N.P. Chow	Agriculture Canada — Brandon, Manitoba		31,000
Forages				
Evaluation of Sulphur Dioxide (SO_2) as a Silage Preservative – to establish the practicality of using SO_2 on a farm scale to preserve high-moisture grain and to enhance the rate of drying of forage cut for hay	R.M. Elofson	Alberta Research Council and the University of Alberta	213,900	35,300
Viruses and Virus-Related Diseases of Forage Crops in Alberta — Evaluation and Control – to develop and evaluate practical control measures against diseases of economically important forage crops in Alberta	Chuji Hiruki	University of Alberta	84,500	44,000
Smooth Bromegrass Breeding Program – to breed high-yielding strains of smooth bromegrass that are adapted to Alberta climatic conditions	P.D. Walton	University of Alberta	70,200	dis-continued
Alfalfa Improvement Program for Disease Resistance – to improve the productivity and yield of alfalfa by reducing losses due to foliage, root and crown diseases	Chuji Hiruki	University of Alberta	154,800	70,000
Annual Forage Crops for Alberta – to identify crops and crop species and management and fertilizer practices which can be used to maximize Alberta forage production	W.B. Berkenkamp	Agriculture Canada — Lacombe, coordinating a province-wide program involving several agencies	314,000	147,200

Title and Objective	Research Manager	Institution	Funding 1979 82	Funding 1982 83
An Investigation of the Properties of Liquid Silage Additives and Techniques to More Accurately Apply Additives to Forage and Silage Crops – to determine better methods for applying preservative and nutritive additives to forage and silage with machinery	W.H. Mains	Agriculture Canada — Lethbridge	29,200	in progress
Development of Improved Forage Crop Production, Harvesting and Utilization Techniques for the Aspen Parkland of Western Canada and Preservation of High-Moisture Hay – to investigate the use of anhydrous ammonia for the preservation of high-moisture alfalfa and bromegrass hay	S.O. Thorlacius	Agriculture Canada — Melfort, Saskatchewan	10,000	completed
Chemical Control of Stem Eyespot of Creeping Red Fescue – to develop a chemical control for stem eyespot disease	J.G.N. Davidson	Agriculture Canada — Beaverlodge	64,200	31,000
Alfalfa Productivity and Yield as Affected by Management Practices and Environmental Factors – to determine the optimum fall cutting dates for alfalfa in relation to yield potential, environmental conditions and winter survival in upper and lower districts of the Peace River Region	J.S. McKenzie	Agriculture Canada — Beaverlodge	99,000	40,000
Evaluation of the Nitrogen-Fixing Effectiveness of Selected Strains of *Rhizobium* and Seed Innoculation Methods for Several Forage Legumes – to increase nitrogen fixation by forage legumes grown in northern Alberta	W.A. Rice	Agriculture Canada — Beaverlodge	83,400	40,500
A Comparison of Brush Control Methods for the Development and Maintenance of Grazing Lands – to study the effectiveness of various brush control methods and to compare their costs against their returns	A.W. Bailey	University of Alberta	164,500	80,000
The Effect of Fertilizer Treatments on the Nutritional Value of Forages – to study the effects of fertilizer on forage nutrient yield and to formulate recommendations for fertilizer application	P.J. Martin	Norwest Feed Research Ltd. — Edmonton	73,400	in progress
Effect of Weed Control on the Establishment and Persistence of Legumes – to determine the effects and benefits of controlling weeds in seedling alfalfa, sainfoin and cicer milkvetch	J.R. Moyer	Agriculture Canada — Lethbridge	34,700	23,000
Agronomic Research and Regional Variety Testing of Forage Varieties Recommended in Alberta – to obtain performance and adaptability data on forages and to provide new technology for maximizing forage yields	J.H. Helm	Alberta Agriculture — Lacombe, in cooperation with several agencies	261,000	159,000
Weed Control in Forage Grasses – to develop new methods for controlling weeds during the establishment of forage grasses	A.L. Darwent	Agriculture Canada — Beaverlodge	26,400	14,400
Minimizing Nitrogen Losses from Urea Applied to Grassland – to assess the relative losses of ammonia applied to the surface of bare soil and grassland	M.J. Rowell	Norwest Soil Research Ltd. — Edmonton	45,000	in progress
Development of a Winter-Hardy, 'Bloat-Safe' Pasture Type Alfalfa Cultivar for the Rancher and Farmer of Western Canada – to develop a 'bloat-safe' alfalfa variety to allow Western farmers to utilize the greater cattle carrying capacity of alfalfa pastures	B.P. Goplen	Agriculture Canada — Saskatoon, Saskatchewan	25,000	36,430

Title and Objective	Research Manager	Institution	Funding 1979/82	Funding 1982/83
Stress Tolerance in Orchardgrass Breeding – to investigate stress tolerance in orchardgrass and to select varieties with specific stress-resistant factors	E.A. Clark	University of Alberta	38,200	51,000
Control of Brush Regrowth by Applying Herbicide with Roller and Wick Applicators – to assess roller- and wick-type herbicide applicators in controlling woody regrowth on pastures	John Waddington	Agriculture Canada — Melfort, Saskatchewan	20,000	15,000
Chemical Control of Pasture Sage *Artemesia frigida* – to evaluate chemicals used to control pasture sage and to determine their long-term economic viability	D.R. Westerlund	Chinook Applied Research Association — Oyen	7,600	4,400
Use of Ethylene for Control of Germination of Dormant Weed Seeds in Alberta Soils – to study ethylene's possible role in stimulating germination of dormant weed seeds, thereby reducing the number of herbicide applications required during the growing season	M.E. Spencer	University of Alberta		30,000
Use of Plant Growth Regulators to Improve the Quality of Forages Grown in the Peace River Region of Alberta – to establish the effects of chemical plant growth regulators on quality characteristics of common forage crops	D.C. Buck	Fairview College — Fairview		17,400
Study of Energy Requirements of the Various Components of Forage Harvesting, Storage and Utilization Systems – to study the energy consumed in major aspects of forage production as a basis for comparing the energy costs of producing hay and silage rather than cereals and oilseeds	E.Z. Jan	Agriculture Canada — Melfort, Saskatchewan		36,000
Alfalfa Seed Production in the Peace River Region – to assess how alfalfa yields are influenced by the age of stands and the management of leafcutting bees	D.T. Fairey	Agriculture Canada — Beaverlodge		25,000
Development of a Specialty Harvester for a Variety of Crops – to develop and test a machine capable of harvesting crops having very light seeds or easily shattered heads	F.A. Rousell	Vertec Industries Ltd. — Vermilion		35,000
Sulphur Dioxide (SO_2) Application System – to improve the function and durability of systems for applying SO_2 to forage	H.P. Harrison	University of Alberta		40,000
Irrigation				
Economical and Relatively Impermeable and Durable Rigid Canal Lining for Southern Alberta Environment – to evaluate three types of canal linings for their durability, seepage control and maintainance requirements – a cooperative program undertaken with the Alberta Irrigation Council	Svat Jonas	Alberta Agriculture — Lethbridge and the University of Calgary		78,000
Development of 'Optimum' Subsurface Drainage Depth and Spacing Criteria for Medium to Fine Textured Soils within Irrigated Alberta – to establish guidelines for determining the best depth and spacing for subsurface drains to reclaim salinized and waterlogged land under irrigation – a cooperative program undertaken with the Alberta Irrigation Council	D.B. Harker	Alberta Agriculture and Agriculture Canada — Lethbridge, and the University of Alberta		76,000

Title and Objective	Research Manager	Institution	Funding 1979 82	Funding 1982 83
Development of a Computerized Classification System Utilizing LANDSAT Digital Data to Detect, Map and Monitor Saline/ Waterlogged Areas under Irrigation – to develop a computerized procedure capable of repetitively monitoring the location and size of saline/waterlogged areas – a cooperative program undertaken with the Alberta Irrigation Council	D.B. Harker	Alberta Agriculture — Lethbridge		42,000
Evaluation of Low Volume Wind Turbines for Pumping Water – to evaluate the economics and efficiency of using wind turbines to pump water on drainage and irrigation projects in Alberta – a cooperative program undertaken with the Alberta Irrigation Council	B.A. Paterson	Alberta Agriculture — Lethbridge, in conjunction with other agencies		59,000
Evaluation of Cutoff Curtain for Seepage Control on Irrigation Canals in Southern Alberta – to evaluate the feasibility of using plastic cutoff curtains to control seepage from irrigation canals – a cooperative program undertaken with the Alberta Irrigation Council	N.E. Jensen	C.W. Farmland Reclamation Ltd. — Olds		15,000
Land Resources and Engineering				
Zero Tillage in Alberta – to evaluate the feasibility of zero tillage as a cropping practice under different soil types and textures	P.A. O'Sullivan	Agriculture Canada — Lacombe and Lethbridge	186,500	91,880
Making the Most of Nitrogen – to examine, evaluate and develop solutions to those factors that contribute to soil and fertilizer nitrogen losses	D.H. Laverty	Alberta Agriculture — Edmonton, coordinating the work of a number of agencies	421,900	244,380
Development of Agricultural Subsurface Drainage Design Procedures for Alberta – to provide essential information for land classification and preliminary data necessary for establishing provincial drainage standards	H.S. Vander Pluym	Alberta Agriculture — Lethbridge, coordinating a project involving a number of agencies	2,000	dis-continued
Fertility Management of Mixed Forage Stands – to study methods of achieving maximum performance from fertilizing practices and to define soil factors which affect the response of mixed stands to residual fertilizers	J.T. Harapiak	Western Co-operative Fertilizers Ltd. — Calgary	70,950	27,850
A Hydrologic Model for Soil/Land Management in the Peace River Region – to develop a model that will help producers in northern Alberta handle excessive surface soil water and soil erosion	D.S. Chanasyk	University of Alberta	121,700	67,000
Production Optimization on Gray Wooded Soils – to provide producer and extension information on management techniques that optimize production from gray wooded soils	J.A. Robertson	University of Alberta	90,000	47,000
Development of Agricultural Subsurface Drainage Design Standards for Alberta – to determine drainage characteristics of southern Alberta drylands in order to establish drainage design standards	H.S. Vander Pluym	Alberta Agriculture — Lethbridge, in conjunction with Agriculture Canada and the University of Alberta	80,000	62,000

Title and Objective	Research Manager	Institution	Funding 1979/82	Funding 1982/83
Conservation of Land Productivity in Alberta – to study erosion processes and losses in organic matter, nutrients and tilth in Alberta cultivated soils	W.B. McGill	University of Alberta	48,000	68,000
Land Price Escalation in Alberta: Economic Causes and Implications – to outline and analyze economic forces in rising Alberta land prices and to assess their impact on the agricultural community	M.M. Veeman	University of Alberta	13,965	18,000
Slough and Wetland Management in North Central Alberta – to develop technology and financial strategy for initiating production from central Alberta wetlands	L.P. Apedaile	University of Alberta	35,700	dis-continued
An Evaluation of the Effectiveness of Snow Management for Moisture Enhancement – to evaluate snow management techniques such as snow trap swathing and alternate stubble heights in improving the springtime level of soil moisture in central Alberta	D.S. Chanasyk	University of Alberta		1,500
Non-Ruminants				
Rapeseed (Canola) Meal Studies – to study the nutritional aspects of replacing soybean meal with canola meal in livestock and poultry rations	A.R. Robblee	University of Alberta	150,000	67,000
Improving Sow Productivity – to improve management practices for pregnant and lactating sows and the care of piglets immediately after farrowing and weaning	F.X. Aherne	University of Alberta	90,750	45,000
Alternate Protein Sources for Swine – to improve swine ration management by determining available levels of amino acids in feeds and maximizing the use of synthetic amino acids	W.C. Sauer	University of Alberta	105,000	44,000
A Study of Transport Deaths in Market Weight Pigs in Saskatchewan – to determine the types and intensity of stress placed on pigs in transit	E.G. Clark	Western College of Veterinary Medicine — Saskatoon, Saskatchewan	6,860	completed
Influence of Dietary Factors on the Incidence of Unexplained Rickets and Related Leg Weakness Problems in Turkeys – to determine how nutritional factors such as vitamin D affect bone development and foot and leg problems in turkeys	Robert Blair	Univ. of Saskatchewan — Saskatoon, Saskatchewan	20,000	25,000
Nutritional Studies in Horses – to study nutrition in the development of growing horses and in raising large numbers of horses under drylot conditions	N.F. Cymbaluk	Western College of Veterinary Medicine — Saskatoon, Saskatchewan	20,000	23,000
Studies on the Availability of Nutrients in Feedstuffs for Poultry – to determine the availability to poultry of energy and other essential nutrients in feedstuffs produced in Alberta	Alan Shires	University of Alberta	25,000	27,500
Effect of Dietary Fat on Skeletal Development in Broiler Chickens – to study the interrelationship between diet fat utilization and skeletal integrity in reducing leg-bone abnormalities in broilers	Steven Leeson	University of Guelph — Guelph, Ontario		20,000

Title and Objective	Research Manager	Institution	Funding 1979/82	Funding 1982/83
Implications of *Salmonella* Contamination of Poultry Meat for Poultry Producers – to study the hazard posed by *Salmonella* on poultry and to evaluate production and processing controls to reduce its presence on poultry	M.E. Stiles	University of Alberta		30,000
Effect of Feedlot Management on Behaviour, Organ Development, Lean Tissue Growth Rate and Lean Tissue Conversion of Pigs – to evaluate the design of testing facilities and of feedlot management techniques employed in performance testing of swine	H.T. Fredeen	Agriculture Canada — Lacombe		38,000
The Effect of Creep Feeds and Creep Feed Composition on the Economics of Rabbit Production – to determine the effect of creep feeding on the growth of young rabbits and their survival to market weight	J.R. Hunt	Agriculture Canada — Agassiz, British Columbia		10,400
Purification and Characterization of Hemorrhagic Enteritis (HE) Virus in Turkeys – to study the HE virus in turkeys at the molecular level	Jan van den Hurk	Veterinary Infectious Disease Organization — Saskatoon, Saskatchewan		30,000
Diagnosis, Prevention and Control of *Hemophilus pleuropneumoniae* (Hp.) in Swine – to improve procedures for diagnosing *Hp.* in swine, to develop vaccines against the disease and to investigate the use of antibiotics to combat acute *Hp.* outbreaks	P.J. Willson	Veterinary Infectious Disease Organization and the Western College of Veterinary Medicine — Saskatoon, Saskatchewan		50,000
Potential for Improving the Productivity of Breeding Gilts – to investigate the biological potential and problems of breeding gilts soon after the onset of puberty	Robert Blair	Univ. of Saskatchewan — Saskatoon, Saskatchewan		40,000
Processing, Transportation, Marketing and Socio-Economics				
Rapeseed (Canola) Oil: Consumer Aspects of Refined Products – to assess the effect of food additives on the flavour of canola margarine and to determine the vitamin E content of canola products and how it reacts to extended use in canola frying fats	F.M. Vaisey-Genser	University of Manitoba — Winnipeg, Manitoba	69,560	15,000
Farm Management Field Laboratory – to create and study the factors involved in maintaining a communications link between university personnel and farm operators	Leonard Bauer	University of Alberta	104,250	28,000
Utilization of Low Erucic Acid Type Rapeseed (Canola) Oil as a Dietary Fat – to assess the metabolic changes in laboratory animals related to having canola oil in regular rations	M.T. Clandinin	University of Toronto — Toronto, Ontario	68,000	44,000
Improvement of Shelf Life of Bakery Products with Gas Packaging Technique and Preservatives – to apply a gas packaging technique and preservative formula to extend the shelf life of bakery goods	Buncha Ooraikul	University of Alberta	46,500	25,500
Compositional Analysis of Alberta Honeys – to examine and identify the composition of Alberta honeys in relation to their nectar source	Peter Sporns	University of Alberta	6,900	10,900
Interesterification of Canola Oils – to study margarines produced from two canola varieties as a base for altering the level of fatty acids in tablespreads	N.A.M. Eskin	University of Manitoba — Winnipeg, Manitoba	11,350	in progress

Title and Objective	Research Manager	Institution	Funding 1979/82	Funding 1982/83
A Study of an Improved Canola Extraction Process – to determine the benefits of disc-mill cracking of canola seed prior to normal processing	J.A. Blake	POS Pilot Plant Corporation — Saskatoon, Saskatchewan		35,000
Utilization of Egg Lipid in Infant Formulas – to establish the use of egg yolk fat in human diets by demonstrating its application in infant nutrition as a source of fat in formulas	M.T. Clandinin	University of Toronto — Toronto, Ontario		30,000
Self-Piloted Integrated Equipment System (SPIES) – to determine the feasibility of a totally integrated system which will premit unmanned operation of self-propelled and piloted farm equipment	Robert Jensen	ComTrac Design Ltd. — Edmonton		withdrawn
Ruminants				
Evaluation of Rapeseed (Canola) Meal in Protected Fat as a Supplement for Lactating Dairy Cattle – to determine the effects of replacing soybean meal with canola meal in the diet of lactating dairy cows	J.J. Kennelly	University of Alberta	21,700	completed
Cattle Adaptability – to assess cattle adaptability to Alberta's climate and its effects on the maternal and productive traits of cattle	R.J. Christopherson	University of Alberta	75,000	in progress
Evaluation and Improvement of the Nutritive Value of Alberta Forages – to determine the digestibility and nutritional usefulness to cattle of forages that can be grown, processed and preserved in northern Alberta	L.P. Milligan G.W. Mathison	University of Alberta and Alberta Agriculture — Edmonton	353,000	in progress
Effect of Stress on Animal Production – to determine the responses of different types of cattle to the stresses of cold winter weather	R.J. Christopherson	University of Alberta	120,000	in progress
Beef Cattle Breeding for Productive Efficiency – to develop breeding and selection strategies which can be used by producers to maximize profitability in beef breeding operations	R.T. Berg	University of Alberta	134,600	70,000
Quality Evaluation of Beef – to evaluate the eating quality, processing characteristics and storability of various types of beef	Z.J. Hawrysh	University of Alberta	76,860	32,500
Beef Cattle Growth and Carcass Research – to study the efficiency of cattle in converting feedstuffs to bone, muscle and fat	M.A. Price	University of Alberta	142,300	50,000
Intensification of Production by Management of Reproduction in Sheep: Basic and Applied Studies of Seasonal Constraints to Reproduction in the Ewe – to improve sheep production by investigating the biological and environmental mechanisms which reduce spontaneous breeding activity in sheep between February and July	N.C. Rawlings	Western College of Veterinary Medicine — Saskatoon, Saskatchewan	51,000	22,700
Infectious Bovine Rhinotracheitis (IBR) — *Pasteurella hemolytica* Induced Respiratory Disease — to study the interactions between viruses and bacteria in bovine respiratory disease and to produce better vaccines for both the viral and bacterial components of IBR	L.A. Babiuk	Western College of Veterinary Medicine — Saskatoon, Saskatchewan	133,000	62,750

Title and Objective	Research Manager	Institution	Funding 1979/82	Funding 1982/83
Stable Toxin (ST) Vaccine – to produce a serum vaccine from Enterotoxin (ST) which is effective against scours caused by Enterotoxigenic *Escherichia coli* (EEC)	C.H. Bigland	Veterinary Infectious Disease Organization — Saskatoon, Saskatchewan	16,300	completed
Rotavirus Vaccine Project – to produce and test various vaccines with the aim of developing a combination vaccine effective against the three most important causes of calf scours	S.D. Acres	Veterinary Infectious Disease Organization – Saskatoon, Saskatchewan	64,000	31,000
Reproductive Function of the Beef Bull: Studies of the Growing Bull Calf and Abnormal Adults to Investigate the Control of Sperm Production, Fertility and Reproductive Performance – to investigate the development of steroid production in beef bulls and its role in controlling sperm and hormone production	N.C. Rawlings	Western College of Veterinary Medicine — Saskatoon, Saskatchewan	46,640	22,000
Gonadotrophin Receptors in Preovulatory Follicles and Luteal Tissue at First Ovulation in Beef Cows – to determine the first ovulation in beef cows by measuring the concentrations of receptors for the hormones LH and FSH in target tissues	J.G. Manns	Western College of Veterinary Medicine — Saskatoon, Saskatchewan	57,450	34,000
Extra Low Voltage (ELV) Electrical Stimulation of Beef Carcasses Using a Rectal Electrode System – to study the changes in ELV-stimulated carcasses and to develop ELV stimulation for use in smaller abattoirs	F.H. Wolfe	University of Alberta	26,000	20,000
Evaluation of Dehydrated Alfalfa and Other Rumen Protein By-Pass Sources as Protein Supplements for Lactating Dairy Cattle – to evaluate the rumen degradability of protein in Alberta feedstuffs for use in formulating low cost rations for high producing dairy cows	J.J. Kennelly	University of Alberta	60,388	60,000
Maternal Recognition of Pregnancy in Cattle – to improve cow fertility and treat cow infertility by examining the changes caused by presence of an embryo	P.F. Flood	Western College of Veterinary Medicine — Saskatoon, Saskatchewan	39,000	27,000
Mineral Metabolism of Cattle – to determine the precise dietary requirements of cattle for copper, zinc and selenium under western Canadian conditions	M.E. Smart	Univ. of Saskatchewan — Saskatoon, Saskatchewan	50,000	40,000
Toxicological Evaluation of Cereals Contaminated with Ergot – to assess the effects on livestock of ergot-contaminated cereals and the significance of residues in consumer meat products	H.B. Schiefer	Western College of Veterinary Medicine — Saskatoon, Saskatchewan	47,240	39,000
Improvement of Feed Efficiency of Ruminants by Chemical Manipulation of Rumen Fermentation *In vivo* and *In vitro* – to assess the effects of the chemical monensin on feed utilization by sheep	K.J. Cheng	Agriculture Canada — Lethbridge	39,400	23,000
The Use of Surface Polysaccharide Antigens as a Vaccine in Preventing Diarrhea Caused by Enteropathogenic *E. coli* (EEC) in Calves, Pigs and Lambs – to use antibody-producing compounds from animals having EEC diarrhea to form a vaccine that prevents EEC scours in calves, pigs and lambs	S.D. Acres	Veterinary Infectious Disease Organization — Saskatoon, Saskatchewan and the University of Calgary	76,000	39,000
Improvement of Feed Efficiency and Disease Resistance of Newborn Calves and Lambs by the Early Introduction of Beneficial Digestive Tract Bacteria – to develop a 'starter' formula for newborn ruminants using bacteria that aid digestion and prevent various digestive problems	K.J. Cheng	Agriculture Canada — Lethbridge and the University of Calgary	25,000	28,000

Title and Objective	Research Manager	Institution	Funding 1979/82	Funding 1982/83
Immunological Control of Shipping Fever – to develop methods for immunizing cattle against shipping fever and to evaluate current methods for handling the disease	P.H.G. Stockdale	Western College of Veterinary Medicine — Saskatoon, Saskatchewan	25,000	35,000
The Study of (Bovine) Viral Diarrhea-Mucosal Disease (BVD-MD) and Malignant Catarrhal Fever (MCF) Viruses in Order to Develop More Efficient Diagnostic Tests to Detect Infections in Domestic and Wild Animals – to develop rapid and reliable diagnostic tests to be used in determining the incidence and distribution of BVD-MD and MCF	Tatsuzo Yamamoto	University of Alberta	28,000	33,000
Determination of Efficacy of Methods Used to Fertility Test Beef Bulls for Multiple-Sire Breeding under Range Conditions – to evaluate, refine and develop selection criteria for predicting fertility in bulls breeding under range conditions	R.J. Mapletoft	Western College of Veterinary Medicine and Agriculture Canada — Lethbridge	44,200	48,000
Furtner Evaluation of Trace Mineral Status in Alberta Feedstuffs in Relation to Animal Nutrition – to determine the level of copper in Alberta feedstuffs and to study the minerals affecting its utilization by livestock	P.J. Martin	Norwest Feed Research Ltd. — Edmonton	25,000	in progress
High Moisture Barley for Feedlot Calves – to assess the relative values of combinations of dry and high-moisture barley on the performance of feedlot calves	J.J. Kennelly	University of Alberta	45,000	60,000
Virulence Mechanisms of *Haemophilus somnus* Bacteria Relative to the Carrier Status and the Immune Response of Infected Feedlot Cattle – to study how cattle develop resistance to *H. somnus* bacteria and how the source affects bacterial strength	J.R. Saunders	Western College of Veterinary Medicine — Saskatoon, Saskatchewan	20,000	16,000
Bovine Respiratory Disease in Alberta Feedlots – to identify and study the risk factors which affect the incidence and severity of respiratory disease in feedlot cattle in Alberta	T.L. Church	Alberta Agriculture — Edmonton, and the Veterinary Infectious Disease Organization	69,000	100,000
Production of Pregnancies Following the Storage of Bovine Embryos in Liquid Nitrogen – to examine factors such as age, rate of freezing and pH on successful cattle embryo freezing and reimplantation	B.F. Shea	Alberta Livestock Transplants Ltd. — Calgary	35,000	in progress
Effects of Cold Environments on Digestion and Feed Intake of Ruminants – to identify forages and diet formulations which are most likely to be used by cattle and sheep exposed to cold environments	R.J. Christopherson	University of Alberta		40,000
Factors Influencing Natural Service Fertility of Beef Bulls in Pasture – to study the interrelationships of scrotal circumference, semen production and libido score in the natural fertility of bulls and the effects of preconditioning and feed energy on the libido and semen production of young bulls	Mahmoud Makarechian	University of Alberta		22,000
Agricultural Potential of Wild Ruminants – to determine the management requirements and the economic potential of using wild ruminants in domestic production systems	R.J. Hudson	University of Alberta		36,000

Title and Objective	Research Manager	Institution	Funding 1979-82	Funding 1982-83
Ruminant Feed Evaluation Unit – to evaluate Alberta forages for their nutrient digestibility and voluntary intake by cattle and sheep	L.P. Milligan	University of Alberta and Alberta Agriculture — Edmonton		120,000
Chemical and Physical Determinants of Forage Digestion and Intake – to find a practical alternative to animal trials in assessing the nutritive value of Alberta forages	L.P. Milligan	University of Alberta and Alberta Agriculture — Edmonton		70,000
Quality of Barley for Feedlot Cattle – to determine the effects of barley quality in the performance of feedlot cattle and how poor quality barley is influenced by processing methods	G.M. Mathison	University of Alberta		25,000
The Effect of Delayed Breeding of Dairy Cows on Milk Yield, Reproductive Efficiency and Economic Returns to Dairy Producers – to examine various factors, including the effect of early versus late breeding, that reduce milk and calf production in dairy cows	J.J. Kennelly	University of Alberta, the University of British Columbia and Agriculture Canada — Agassiz, B.C.		90,000
Control of Protein Deposition in Ruminant Muscle – to characterize and quantify fundamental processes of beef muscle growth	J.R. Thompson	University of Alberta		20,000
Evaluation of the Efficiency of Weaned Calf Production in Beef Cattle – to assess breeding beef calves for increased yearling weight in order to improve the efficiency of weaned calf production	J.A. Newman	Agriculture Canada — Lacombe		20,000
The Effect of Ration, Implant and Rumensin on the Performance of Growing and Finishing Beef Steers – to study the interreaction between monensin and growth implants in beef cattle and the effect the type of feed, such as grain or hay, has on their performance	S.E. Beacom	Agriculture Canada — Melfort, Saskatchewan		20,000
Field Testing the University of Alberta Beef Synthetic Bulls – to test Beef Synthetic bulls as a sire breed and to evaluate crossbred females as a maternal breed for commercial beef production	Mahmoud Makarechian	University of Alberta		40,000
Development and Testing of a Calf Scours Coronavirus Vaccine – to develop a vaccine against coronavirus diarrhea in calves and to combine it with *E. coli* and rotavirus vaccines to produce a single vaccine for preventing calf scours	S.D. Acres	Veterinary Infectious Disease Organization — Saskatoon, Saskatchewan		45,000
Management Strategies for Young Bulls – to study confinement techniques for raising young bulls	J.J. Kennelly	University of Alberta		37,400
Special Crops				
Regional Potato Testing – to breed superior potato lines suited to the processing and fresh and export marketing needs of Alberta	D.R. Lynch	Agriculture Canada — Lethbridge and the University of Alberta	134,736	65,640
Alternate Crop Varietal Development for High Oil and Protein Yields – to breed soybean and safflower varieties suitable for irrigated and dryland farming in Alberta	H.H. Mundel	Agriculture Canada — Lethbridge	132,380	40,500

Title and Objective	Research Manager	Institution	Funding 1979 82	Funding 1982 83
Studies of the Development, Spread and Control of Four Economically Important Diseases of Greenhouse Crops – to study the factors aiding the development and spread of major greenhouse crop diseases and to develop integrated disease control methods	R.J. Howard	Alberta Agriculture, Alberta Horticultural Research Center — Brooks	123,800	in progress
Effect of Various Soil-Active Herbicides on Succeeding Rotational Crops – to determine the duration of herbicidal residues and their effects on rotation crops	Rudy Esau	Alberta Agriculture, Alberta Horticultural Research Center — Brooks	21,600	in progress
Establishment of Leaf Tissue Analysis Standards for Greenhouse Crops in Alberta – to establish an analysis basis for detecting nutrient deficiencies and diseases in Alberta greenhouse crops	M.J. Rowell	Norwest Soil Research Ltd. — Edmonton	71,600	in progress
The Impact of Cultural Practices on the Growth and Production of Tree Crops – to develop methods for maximizing the growth of woody plants without loss of winter hardiness	R.H. Knowles	University of Alberta	43,700	3,000
Studies on the Biology and Control of Root Diseases on Pulse Crops – to monitor the incidence of and develop controls for root diseases of pulse crops in southern Alberta	R.J. Howard	Alberta Agriculture, Alberta Horticultural Research Center — Brooks	58,000	in progress
A Study of the Variability in Hill to Hill Yields of Alberta Potatoes – to identify and determine the relative importance of factors leading to variable yields in Alberta potatoes	W.T. Andrew	University of Alberta	32,600	25,700
The Maximum Possible Yields of Selected Vegetables under Controlled Environmental Conditions – to investigate the yield response of selected vegetables such as tomatoes to a totally controlled growing environment	E.W. Toop	University of Alberta	20,000	in progress
Pathogen-Free Seed Potatoes — To Ensure a Continuing Source of the Highest Quality of Seed Potatoes for Alberta Producers of Seed, Processing and Fresh Potatoes – to improve disease testing and control methods for seed potatoes	S.H. De Boer	Agriculture Canada — Vancouver, British Columbia		37,500
Control of Root Rot on Pulse Crops in Southern Alberta – to study factors such as soil temperature, moisture, compaction and ripping on the survival and incidence of root rot on pulse crops	R.J. Howard	Alberta Agriculture, Alberta Horticultural Research Center — Brooks		70,000
Cultivar and Agronomic Studies of Special Crops in Alberta with Emphasis on the Central and Northern Areas – to identify special crops and their varieties best suited to different areas of Alberta and to define areas suited to special crop production	R.G. Gaudiel	Alberta Agriculture, Alberta Horticultural Research Center — Brooks		75,000
A Study of Southern Alberta Russet Burbank Potato Fields to Establish the Optimum Ratios between Essential Elements That Will Promote Maximum Quality Growth – to calculate the optimum ratios of essential plant nutrients that will promote quality potato growth and yield	P.D. Sandberg	Alberta Soil and Feed Analysis Ltd. — Lethbridge		5,000

Distribution of Projects' by Institution and Program Area, 1979-83

Program Area	Agriculture Canada		Alberta Agriculture		Alberta Research Council		Private Industry		Queen's University		University of Alberta		University of British Columbia		University of Calgary		University of Guelph		University of Manitoba		University of Toronto		Veterinary Infectious Disease Organization		Western College of Veterinary Medicine[1]		TOTALS	
Apiculture/ Entomology	4						1		1		1							1								8		
Cereals and Oilseeds	11	1	4								6	1	1					1								23	2	
Forages	12		1	1	1		5				7	1														26	2	
Irrigation		1	4				1					1			1											5	3	
Land Resources and Engineering	1	1	3	1		1	1	2			6	1														11	6	
Non-Ruminants	2										5					1					2		4	1	14	1	
Processing, Transportation, Marketing and Socio-Economics							1				3							2		2					8			
Ruminants	4	2	1	3			2				21			1		2					4	1	10		42	9	
Special Crops	3		5				2				3	1													13	1	
TOTALS	37	5	18	5	1	1	13	2	1	1	52	5	1	1		3	1	4		2	6	1	14	1	150	24		

Distribution of New Projects and Estimated Funding, by Program Area, 1982-83

	Projects		Funding	
Program Area	Assigned	% of Total Assigned	Assigned	% of Total Assigned
Apiculture/Entomology	—	—	$ —	—
Cereals and Oilseeds	2	5	83,300	5.2
Forages	6	15	183,400	11.5
Irrigation	5	13	270,000	16.9
Land Resources and Engineering	1	3	1,500	.1
Non-Ruminants	7	18	218,400	13.7
Processing, Transportation, Marketing and Socio-Economics	2	5	65,000	4.1
Ruminants	13	33	585,400	36.7
Special Crops	4	10	187,500	11.8
TOTALS	40		$1,594,500	

□ **awarded projects**
■ **non-managing involvement in projects**

[1] Because of the close relationship between the Western College of Veterinary Medicine (WCVM) and the University of Saskatchewan (U of S), projects awarded to the U of S have been included in the totals of the WCVM in these tables.

Distribution of Projects and Estimated Funding, by Institution, 1979-83

	Projects					Funding			
Institution	Awarded	% of Total Awarded	Joint Involvement[1]	Total Involvement	% of Total Involvement	Awarded	% of Total Awarded	In Use[2]	% of Total In Use
Agriculture Canada	37	25	5	42	24	$ 4,310,591	28.6	$ 4,658,251	30.9
Alberta Agriculture	18	12	5	23	13	2,889,680	19.2	1,891,800	12.5
Alberta Research Council	1	1	1	2	1	249,200	1.7	137,800	.9
Private Industry	13	9	2	15	9	485,700	3.2	635,600	4.2
Queen's University	1	1	—	1	1	97,000	.6	97,000	.6
University of Alberta	52	35	5	57	33	5,295,194	35.1	5,707,114	37.8
University of British Columbia	1	1	1	2	1	37,500	.2	63,500	.4
University of Calgary	—	—	3	3	2	—	—	40,800	.3
University of Guelph	1	1	—	1	1	20,000	.1	20,000	.1
University of Manitoba	4	3	—	4	2	206,510	1.4	206,510	1.4
University of Toronto	2	1	—	2	1	142,000	.9	142,000	.9
Veterinary Infectious Disease Organization	6	4	1	7	4	351,300	2.3	484,300	3.2
Western College of Veterinary Medicine	14	9	1	15	9	994,840	6.6	994,840	6.6
TOTALS	150		24	174		$15,079,515		$15,079,515	

Distribution of Projects and Estimated Funding, by Program Area, 1979-83

	Projects		Funding	
Program Area	Assigned	% of Total Assigned	Assigned	% of Total Assigned
Apiculture/Entomology	8	5	$ 1,187,825	7.9
Cereals and Oilseeds	23	15	3,382,081	22.4
Forages	26	17	2,793,630	18.5
Irrigation[3]	5	3	270,000	1.8
Land Resources and Engineering	11	7	1,698,325	11.3
Non-Ruminants	14	9	867,510	5.8
Processing, Transportation, Marketing and Socio-Economics	8	5	494,960	3.3
Ruminants	42	28	3,424,428	22.7
Special Crops	13	9	960,756	6.4
TOTALS	150		$15,079,515	

[1] Each funded project is awarded to only one institution, although many projects are actually joint institutional efforts. 'Joint Involvement' notes if an institution is a non-managing partner in a project.

[2] Funding In Use represents awarded funds, augmented by any funds received under joint projects, less any funds disbursed under joint projects.

[3] 1982-83 is the first year awards have been made under Farming for the Future's irrigation program area. All other program areas have operated since 1979.

Distribution of All Projects and Estimated Funding, by Institution, 1982-83

	Projects					Funding			
Institution	Awarded	% of Total Awarded	Joint Involvement[1]	Total Involvement	% of Total Involvement	Awarded	% of Total Awarded	In Use[2]	% of Total In Use
Agriculture Canada	36	26	5	41	25	$1,552,860	27.2	$1,639,820	28.7
Alberta Agriculture	15	11	5	20	12	1,192,380	20.9	823,800	14.4
Alberta Research Council	1	1	1	2	1	35,300	.6	16,100	.3
Private Industry	13	9	1	14	9	139,650	2.4	193,150	3.4
Queen's University	1	1	—	1	1	47,000	.8	47,000	.8
University of Alberta	49	35	5	54	33	1,952,471	34.2	2,071,491	36.3
University of British Columbia	1	1	1	2	1	—	—	26,000	.5
University of Calgary	—	—	3	3	2	—	—	12,300	.2
University of Guelph	1	1	—	1	1	20,000	.4	20,000	.4
University of Manitoba	4	3	—	4	2	68,300	1.2	68,300	1.2
University of Toronto	2	1	—	2	1	74,000	1.3	74,000	1.3
Veterinary Infectious Disease Organization	5	4	1	6	4	195,000	3.4	285,000	5.0
Western College of Veterinary Medicine	13	9	1	14	9	434,450	7.6	434,450	7.6
TOTALS	141		23	164		$5,711,411		$5,711,411	

Distribution of All Projects and Estimated Funding, by Program Area, 1982-83

	Projects		Funding	
Program Area	Assigned	% of Total Assigned	Assigned	% of Total Assigned
Apiculture/Entomology	8	6	$ 359,900	6.3
Cereals and Oilseeds	21	15	1,040,281	18.2
Forages	24	17	974,630	17.1
Irrigation	5	4	270,000	4.7
Land Resources and Engineering	9	6	627,610	11.0
Non-Ruminants	13	9	449,900	7.9
Processing, Transportation, Marketing and Socio-Economics	8	6	188,400	3.3
Ruminants	40	28	1,478,350	25.9
Special Crops	13	9	322,340	5.6
TOTALS	141		$5,711,411	

[1] Each funded project is awarded to only one institution, although many projects are actually joint institutional efforts. 'Joint Involvement' notes if an institution is a non-managing partner in a project.

[2] Funding In Use represents awarded funds, augmented by any funds received under joint projects, less any funds disbursed under joint projects.

Estimated Project Labour Costs, 1979-82[1]

Institution	Labour Cost[2]	% of Total Labour Cost	Funding In Use[3]	% of Labour Cost to Total Funding In Use
Agriculture Canada	$2,135,025	32.1	$3,018,431	70.7
Alberta Agriculture	767,050	11.5	1,068,000	71.8
Alberta Research Council	89,555	1.3	121,700	73.6
Private Industry	241,330	3.6	442,450	54.5
Queen's University	29,000	.4	50,000	58.0
University of Alberta	2,732,807	41.0	3,635,623	75.2
University of British Columbia	25,000	.4	37,500	66.7
University of Calgary	19,500	.3	28,500	68.4
University of Manitoba	113,280	1.8	138,210	82.0
University of Toronto	48,105	.7	68,000	70.7
Veterinary Infectious Disease Organization	135,902	2.0	199,300	68.2
Western College of Veterinary Medicine	324,761	4.9	560,390	58.0
TOTALS	$6,661,315		$9,368,104	71.1

Distribution of New Projects and Estimated Funding, by Institution, 1982-83

	Projects					Funding			
Institution	Awarded	% of Total Awarded	Joint Involvement[4]	Total Involvement	% of Total Involvement	Awarded	% of Total Awarded	In Use[3]	% of Total In Use
Agriculture Canada	9	23	2	11	23	$ 270,200	16.9	$ 270,200	16.9
Alberta Agriculture	6	15	2	8	17	400,000	25.1	400,000	25.1
Private Industry	5	13	—	5	10	107,400	6.7	107,400	6.7
University of Alberta	14	35	1	15	31	601,900	37.7	575,900	36.1
University of British Columbia	—	—	1	1	2	—	—	26,000	1.6
University of Calgary	—	—	1	1	2	—	—	—	—
University of Guelph	1	3	—	1	2	20,000	1.3	20,000	1.3
University of Toronto	1	3	—	1	2	30,000	1.9	30,000	1.9
Veterinary Infectious Disease Organization	3	8	—	3	6	125,000	7.8	125,000	7.8
Western College of Veterinary Medicine	1	3	1	2	4	40,000	2.5	40,000	2.5
TOTALS	40		8	48		$1,594,500		$1,594,500	

[1] The salaries of most project managers are paid directly by their employing institutions.

[2] Labour Cost represents the actual cost of manpower in relation to Funding In Use.

[3] Funding In Use represents awarded funds, augmented by any funds received under joint projects, less any funds disbursed under joint projects.

[4] Each funded project is awarded to only one institution, although many projects are actually joint institutional efforts. 'Joint Involvement' notes if an institution is a non-managing partner in a project.

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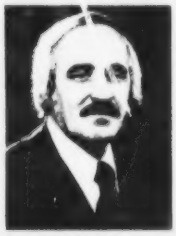

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Program Area	Processing, Transportation, Marketing and Socio-Economics	Ruminants	Special Crops
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Additional copies of this report and further information on Farming for the Future are available from:

The Secretary
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Auditor's Report

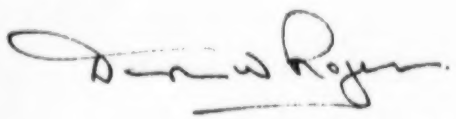
Agricultural Research Council of Alberta
Farming for the Future Program

AUDITOR'S REPORT

To the Members of the Agricultural
Research Council of Alberta

I have examined the balance sheet of the Agricultural Research Council of Alberta Farming for the Future Program as at March 31, 1982 and the statement of income, expenditure and unexpended funds for the year then ended. My examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as I considered necessary in the circumstances.

In my opinion, these financial statements present fairly the financial position of the Program as at March 31, 1982 and the results of its operations for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.



C.A.
Auditor General

Edmonton, Alberta
September 27, 1982

Agricultural Research Council of Alberta
Farming for the Future Program

Statement A

BALANCE SHEET
As at March 31, 1982

	1982	1981
ASSETS		
Current:		
Cash	**$15,500**	$ 15,500
Deposits in trust (Note 3)	**25,355**	—
Accounts receivable	**—**	302,400
	$40,855	$317,900
LIABILITIES		
Current:		
Holdbacks payable	**$25,165**	$ 9,375
Research grants payable	**—**	302,400
	25,165	311,775
Unexpended funds, Statement B	**15,690**	6,125
	$40,855	$317,900

The accompanying notes are part of these financial statements.

Statement B

STATEMENT OF INCOME, EXPENDITURE AND UNEXPENDED FUNDS
For the Year Ended March 31, 1982

	1982	1981
Income		
Contributions from the Province of Alberta:		
Alberta Heritage Savings Trust Fund (Note 4)	**$3,499,253**	$1,983,014
Grants returned	**—**	15,500
	3,499,253	1,998,514
Expenditure		
Research grants, Schedule 1:		
Universities	**2,073,773**	390,570
Other	**161,540**	99,300
Projects administered by The Alberta Research Council, Schedule 2	**1,254,375**	1,502,519
	3,489,688	1,992,389
Excess of income over expenditure	**9,565**	6,125
Unexpended funds at beginning of year	**6,125**	—
Unexpended funds at end of year	**$ 15,690**	$ 6,125

NOTES TO THE FINANCIAL STATEMENTS
March 31, 1982

Note 1 Authority

The Farming for the Future Program operates under the authority of the Department of Agriculture Act, Chapter D-12, Revised Statutes of Alberta 1980.

Pursuant to section 6 of the Act, the Program was established by Ministerial Order under the administration of the Agricultural Research Council of Alberta.

Note 2 Significant Accounting Policies

General

All research grants are considered to be fully expended when disbursed by the Farming for the Future Program, therefore, unexpended balances on grants awarded to Agriculture Canada and the Alberta Department of Agriculture are not included in the financial statements.

Changes in Financial Position

A statement of changes in financial position is not provided as disclosure in these financial statements is considered to be adequate.

Administration Expenses

Administration expenses are provided by the Province of Alberta at no cost to the Program, and accordingly are not reflected in these financial statements.

Note 3 Deposits in Trust

Deposits in trust consist of deposits in the General Trust Account of the Province of Alberta.

Note 4 Contributions from the Province of Alberta

The Appropriation (Alberta Heritage Savings Trust Fund, Capital Projects Division) Act, 1980 provided for payments to the Program to a maximum of $3,500,000 for the year ended March 31, 1982 (1981 $2,000,000). This provision which enabled the Program to receive funds up to the stated maximum lapsed at March 31, 1982.

Note 5 Capital Assets

Pursuant to agreements between the Council and two research agencies, The University of Alberta and The Alberta Research Council, capital assets purchased from research grants remain the property of the Province of Alberta. At March 31, 1982 the cost of such capital assets was approximately $764,000 (1981 $520,000).

Note 6 Commitments

As at March 31, 1982 the Program had commitments totalling $5,603,000 with respect to unadvanced amounts on approved grants.

Note 7 Approval of Financial Statements

These financial statements were approved by management on September 27, 1982.

Schedule 1

SCHEDULE OF RESEARCH GRANTS
For the Year Ended March 31, 1982

	1982	1981
Universities:		
The University of Alberta	$1,428,793	$302,170
The University of Saskatchewan	470,130	21,600
The University of Manitoba	67,850	15,800
Queen's University	50,000	—
The University of Toronto	35,000	33,000
The University of British Columbia	19,500	18,000
The University of Calgary	2,500	—
	2,073,773	390,570
Other:		
Norwest Feed Research Ltd.	50,000	1,700
Norwest Soil Research Ltd.	40,300	40,630
Alberta Livestock Transplants Ltd.	35,000	—
Western Cooperative Fertilizers Ltd.	25,000	50,880
Chinook Applied Research Association	7,600	—
Pirker Apiaries	3,640	6,090
	161,540	99,300
	$2,235,313	$489,870

Schedule 2

SCHEDULE OF RESEARCH GRANTS FOR PROJECTS ADMINISTERED BY THE ALBERTA RESEARCH COUNCIL
For the Year Ended March 31, 1982

	1982	1981
Canada Department of Agriculture:		
Beaverlodge	$ 410,150	$ 373,800
Lethbridge	139,840	327,704
Lacombe	124,200	132,900
Saskatchewan	108,485	125,300
Alberta Department of Agriculture:		
Field crops	203,000	246,000
Alberta Horticultural Research Center	143,100	158,050
Soils	—	58,400
Other	103,600	35,965
Sundry	22,000	44,400
	$1,254,375	$1,502,519

POOR

QUALITY

ORIGINAL